axial interference figure with an optical angle of 3°–4°, while in the exterior zone the axial angle is 30°–35°. In both substances the axial figure is decreased by heating. Their hardness is above .7, and their specific gravity, 3.331. Their conductivity for heat is greatest in the direction of the *c* axis.——Three new *cupro-descloizites* are described and analyzed by Hillebrand.[21] The first occurs massive in the Mayflower Mine, Beaverhead county, Montana, in lumps of a dull yellow to pale orange color. The second is found as thick botryoidal incrustations in quartz, with a dull green color on the surface, and a brown color on a fresh fracture. It is found at the Lucky Cuss Mine, Tombstone, Arizona. The third came from the Commercial Mine, Georgetown, New Mexico, where it also is found as an incrustation on *quartz*. It varies in color from yellow through all shades of orange red to deep reddish-brown. The incrustations are distinctly crystalline, being made up of globular masses composed of little flat crystals crowded close together. At other times the incrustation is acicular in shape, when it appears to have formed on bunches of radiating *vanadinite* needles. The composition of this variety is:

PbO	CuO	FeO	ZnO	V_2O_5	As_2O_5	P_2O_5	H_2O	Cl	SiO_2	CaO	MgO
56.01	1.05	.07	17.73	20.44	.94	.26	2.45	.04	1.01	.04	.03

BOTANY.

Uredinial Parasites.—From a practical standpoint as well as from a biological, uredinial parasites are exceedingly interesting. A specimen, or specimens rather, found in Dawes County, Nebraska, this summer (July 20), deserve, I think, special mention. An Æcidium on *Lygodesmia juncea* Don. (Æcidium compositarum Mart. var. lygodesmiæ Webber), was found very commonly. It was very destructive, frequently distorting whole plants, and, by partially stopping the growth above, giving them a somewhat depressed much branched appearance.

The avenger, however, was close at hand, entirely too close for the good of the Æcidium. Not in the form of man, with his multifarious external poison applications, but simply another little parasite on this parasite, wreaking vengence. It was the little *Tuberculina persicina* (Ditm.) Sacc., a plant closely allied to the smuts, found very rarely in

[21] *Amer. Jour. Sci.*, June, 1889, p. 434.

America. It was very destructive to the Æcidium, its smooth violet-colored spores completely filling up fully half the pseudoperidia and injuring many more, destroying and taking the place of the æcidiospores. It has been reported before from but one place in America, so far as I can learn,—from Oregon,—unless we consider, as Farlow has hinted (*Botanical Gazette*, 1885, page 245), that Synchytrium jonesii Pk. (Tuberculina jonesii Pk. Sacc.) is identical with it.

On the same specimens of Æcidium, another but more common parasite was also found,—*Darluca filum* (Biv.) Cast. This is not usually very destructive. Cases are found, however, in which it is. To *Uromyces junci* (Desm.) Tul. it is frequently very injurious. Specimens of the uredo of *Puccinia rubigo-vera* on wheat collected at Crete, Nebraska, in July, 1886, are much injured by it. Perhaps it is a much more injurious species than we are wont to suppose. We have nothing to fear from it, however, as we have from some of its hosts. If it is a common wheat-rust parasite, we on the contrary can heartily say, would that it were more common.—HERBERT J. WEBBER, *Lincoln, Nebraska.*

The Lichens of the Guinea Islands.—The lichens of the three islands of St. Thomas, Prince, and Capra, lying in the Gulf of Guinea, off the west coast of tropical Africa, have recently been treated by Nylander, in a little work of 54 pages (*Lichenes Insularum Guineensium*). A noticeable feature of the lichen flora of these islands is that while on St. Thomas Island the *Corticolæ* predominate, on Prince the *Saxicolæ* are much more common; also quite a number *Foliicolæ* are found on the former. This will give an idea of the nature of the land in the islands. Another feature important to American lichenologists, is that of the 129 species enumerated, about 40 are found in our own country, or about one-third of the species are common to both places. In this pamphlet Dr. Nylander seems to lay considerable stress on chemical reactions, especially that of sodium on the "gelatinous hymenium," as a means of determining species. The "observations" in the back part of the book contain considerable information regarding new species from various localities, that of most interest to us being observation six, containing descriptions of new species collected by Dr. Eckfeldt and W. W. Calkins, etc., principally in Florida.—THOS. A. WILLIAMS, *Lincoln, Nebraska.*

The Flora of Central Nebraska (Continued).—In climbing the bluffs we gathered specimens of *Fragaria vesca* L., and succeeded in disposing of quite a number of its elongated conical berries. On the

climb up we ate berries also of *Rubus strigosus* Michx., *Ribes aureum* Pursh., *R. floridum* L., and *R. rotundifolium* Michx. At the base of the bluff the common *Cystopteris fragilis* Bernh., grew. Near the top, in more open places, we discovered the western fern *Woodsia oregana* Eaton. At the top and also over the sand hills in numerous places the dwarf sand cherry *Prunus pumila* L. occurs very plentifully.

Along the bank of the river, just above the water's edge, we found rank growths of *Asplenium filix-fœmina* Bernh., and *Aspidium thelypteris* (L.) Swartz. Nowhere else in Nebraska have I seen such a luxuriant growth of ferns. I collected fronds of each fully two and a half feet high. This is the only place the former species is known to occur in Nebraska. About a mile further up the stream a low wet patch of ground of about two acres in extent is a perfect mat of ferns *Onoclea sensibilis* L., and *Aspidium thelypteris* (L.) Swartz.

The next morning we took a walk along the edge of the bluffs on the south side to investigate the flora and the fauna of the "blow-outs."[1] Here we made some excellent finds. Right in the "blow-outs," where almost nothing else grew, we found quite commonly bunches of *Redfieldia flexuosa* Vasey (Torr. Bull., July, 1887). Such a find pleased me, but think of finding also in the same place bunches of *Eragrostis tenuis* (Ell.) Gray. The former has heretofore been reported from Colorado and Canadian R., the latter from Texas and Arizona. Both were also found in Nebraska this summer near Valentine. Branches of *Muhlenbergia pungens* Thurb. were also common, and are found usually just at the edge of the "blow-outs," hanging over. *Astragalus pictus* Gray, var. *filifolius* Gray (bird-egg, I call it, from its beautifully mottled red or purple and white pods), also frequents the "blow-outs." These with *Lathyrus polymorphus* Nutt., *Psoralea lanceolata* Pursh., *Pentstemon cæruleus* Nutt., and sparingly *Munroa squarrosa* Porr., form at this place the principal and remarkable flora of the Dismal River "blow-outs."

On the hillsides, etc., patches of buffalo grass (*Buchloë dactyloides* Engelm.) frequently occur, and in one place a few stems of *Paspalum setaceum* Michx. were found. *Yucca angustifolia* Pursh. is scattered here and there all through this region, and almost every plant has its leaves more or less affected by *Kellermannia yuccigena* E. and E.

In the grass on a sandy hill another find of the trip was made, *Tylostoma angolense* Welw. and Curr. This until last year was known

[1] A "blow-out" is a crater-like cavity in the side of a sand hill. Within it is a mass of loose sand, bordered by grasses and other plants which grow upon its margin. It is supposed to be formed by the action of the wind.

to occur only in one place, so far as I can learn in Angolia, Africa. In the summer of 1887 Mr. Marsland, a student of the University of Nebraska, collected three specimens in Manitou, Colorado, and handed them to me for identification. Failing to determine the species satisfactorily, the specimens were referred to Mr. A. P. Morgan, who pronounced them *Tylostoma angolense.* Besides this stalked puff-ball specimens of *Bovista circumscissa* Berk. and Curt., *Secotium warnei* Peck, and *Lycoperdon fragile* Vitt., were found in the grass.

Descending into the valley on the road back I gathered specimens of *Clematis ligusticifolia* climbing over the underbrush. The leaves of this also were contorted and frequently almost destroyed by *Æcidium clematidis* D. C. In a pond two species of *Chara* were collected, *Chara coronata* A. Br. and *Chara*—(undetermined).

Circœa lutitiana, a common plant in eastern States, but not yet discovered in Eastern Nebraska, and not given by Coulter in his Rocky Mountain Botany, was noticed in a shaded nook. It has also been collected during the summer near Valentine. Specimens were also collected of *Euphorbia petaloidea* Engelm., *Monarda citriodora* Cerv., *Froelichia ploridana* Moquin., *Ipomœa leptophylla* Torr., and *Asclepias verticillata* L., var *pumilla* Gray.

On the Middle Loup River, in the same county, and representing the same flora, we found in stagnant pools, *Ricia fluitans* L., *Utricularia minor* L., *Pediastrum angulatum* (Ehrb.) Menegh. and *Merismopedia violacea* (Breb.) Ktz., a little violet-colored plant that has not been known before to occur in America. It is distinguished from known American species by its smaller size and violet color. Specimens of *Triglochin maritimum* L., and *Commelyna virginica* L., were found in low places, but they are rather rare.—H. J. WEBBER, *Botanical Laboratory, University of Nebraska.*

Bailey's Studies of Carex.—The initial number of the *Memoirs of the Torrey Botanical Club* is devoted to an article by Professor L. H. Bailey, entitled, "Studies of the Types of Various Species of the Genus Carex." The purpose of the paper is well stated in the opening paragraph, which may well be reproduced here:

"An attempt has been made during the past year to see all the existing types of North American species of Carex. These types are widely scattered, largely in the Old World, and the whereabouts of many of them have been entirely unknown. Many of them had never been seen by a student of the genus since their publication, and there was reason to believe that some species which had been seen by

our earlier botanists have not been properly comprehended in the light of our fuller knowledge. The examination has proved that many of our catalogued species are fictitious, and that considerable changes in nomenclature must be made. However such radical changes are to be regretted, they are nevertheless unavoidable if priority of publication is to be considered; and there is the surety that in the future the changes must be very few. The very oldest types have been seen so far as they are known to exist, and almost every name which has been applied to North American species is accounted for and understood. It is, therefore, evident that any further changes in the names of our species must be almost entirely such as rest upon judgments of the systematic merits of accepted species and varieties."

Professor Bailey visited or had access to twenty-six important collections of carexes, twenty-one of which are in European herbaria. In his paper he upholds the use of the oldest published name or combination in every instance. He has given varietal names "only to those forms which assume a considerable degree of permanence under various conditions, and the combining of which would lead to confusion in the knowledge of the species." He has no sympathy "with that ultra refinement of classification which gives names to specimens rather than to species and their larger variations. Such refinements serve no useful purpose, and do not merit the name of science.

Eighty-four species are critically noticed in the paper, and the synonymy carefully determined. The notes under each species are of the greatest value to the student of this difficult genus, and will have to be carefully studied by every one who wishes to know what are the latest views as to the relationship of the many puzzling species.—CHARLES E. BESSEY.

ZOÖLOGY.

The Zoological Position of Palawan.—Mr. A. H. Everett, in a paper before the Zoölogical Society of London, contends that Palawan and the other islands intervening between Borneo and Mindoro form an integral part of the Bornean group, and do not belong to the Philippine group with which they are usually associated. His grounds are that they are connected with Borneo by a shallow submerged bank, and are separated from the Philippines by water over 500 feet in depth; the fauna also shows a marked preponderance of